

REMARKS

The office action of January 23, 2008, has been carefully considered.

It is noted that the application is objected to for not containing section headings.

Claims 2, 3, 5 and 6 are rejected under 35 U.S.C. 112, second paragraph.

Claims 1-6, 9 and 10 are rejected under 35 U.S.C. 103(a) over Görnerup.

Claim 7 is rejected under 35 U.S.C. 103(a) over Görnerup in view of the patent to Calderon.

Claim 8 is rejected under 35 U.S.C. 103(a) over Görnerup in view of the patent to Faust.

Claim 11 is rejected under 35 U.S.C. 103(a) over Görnerup in view of the patent to Guillot.

In connection with the Examiner's objections to the application, applicant has amended the specification to include section headings.

In view of these considerations it is respectfully submitted that the objection to the application is overcome and should be withdrawn.

In view of the Examiner's rejections of the claims, applicant has canceled claims 2-4 and amended claims 1, 5 and 6.

It is respectfully submitted that the claims now on file particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended the claims to address the instances of indefiniteness pointed out by the Examiner.

In view of these considerations it is respectfully submitted that the rejection of claims 2, 3, 5 and 6 under 35 U.S.C. 112, second paragraph is overcome and should be withdrawn.

It is respectfully submitted that the claims presently on file differ essentially and in an unobvious, highly advantageous

manner from the methods disclosed in the references.

Turning now to the references and particularly to Görnerup, it can be seen that this reference discloses a method for the production of a bulk of molten metal. According to the presently claimed invention, the performs float in the slag near the phase boundary between the metal melt and the slag, due to the adjusting of the density of the performs. When the performs are melted the components thereof react with each other independently of the composition of the slag. The  $\text{Fe}_2\text{O}_3$  reacts with the carbon to form CO or later  $\text{CO}_2$  and thereby leads to foaming of the slag. With the addition of limestone, the formation of  $\text{CO}_2$  in the pellets/briquettes is increased due to the thermal splitting of the limestone.

The reaction of the components with each other takes place already in the formation stage of the slag when there are little or no oxides present, and then also take place when there are no oxides present in the slag. The principle is similar to an effervescent table. According to the present invention, due to the floating position of the performs near the lower phase boundary of the slag layer, the location of the gas bubbles is also in the lower region of the slag layer whereby the foaming of the slag can

be optimized.

An oxide formation is thereby prevented from the outset because the reacting materials immediately react out of the pellets/briquettes. This process functions with or without the blowing in of oxygen from outside. Due to the introduction of pellets or briquettes directly after the melting of the scrap one has a slag with very limited oxide components. The slag is fluid and leads to a fast melting of the components of the pellets/briquettes.

In contrast, Görnerup teaches a raw iron granulate having metallic components with a carbon content, as is known from raw iron. Essentially, the granulate form serves as an added material with a high iron content for producing carbon steel or stainless steel. As a side effect the granulate serves as a reduction material in the slag, whereby the components oxygen and silicon of the granulate can react with oxides in the slag. It is thus necessary that the slag in the first instance have oxide components before a reaction of the components of the granulate with the oxides of the slag can take place, i.e.  $\text{FeO}(\text{slag})$  and  $\text{C}(\text{granulate})$  to CO later to  $\text{CO}_2$ . If the proportion of oxidizable components is zero or very small, no formation of CO or  $\text{CO}_2$  and

therewith foaming of the slag is possible. In order to provide a larger proportion of oxides in the slag it is thus necessary to blow large quantities of oxygen from outside into the metal bath. This leads to an oxidation of components such as  $\text{FeO}$ ,  $\text{Cr}_2\text{O}_3$ ,  $\text{SiO}_2$  and  $\text{MnO}$ . (The formation of oxides is not desired because they cause metallic components in the slag to wander and reduce the metallic results from Fe and Cr.) Only then can the granulate react. The components of the granulate reduce the oxides in the slag and form theoretical  $\text{CO}$ . In practice it is to be expected that due to the blowing in of oxygen into the high chromium containing melt the  $\text{Cr}_2\text{O}_3$  content of the slag increases. Simultaneously, the viscosity increases and the slag temperature is reduced by introducing the granulate, which also results in an increase in the viscosity. There is the risk that finally the granulate remains on the upper surface of the slag without reacting.

Thus, Görnerup does not teach or suggest the present invention to those skilled in the art. There is no suggestion of introducing a mixture metal oxide and carbon as a perform that has its density adjusted so that the perform is heavier than the slag and lighter than the metal melt, and floats near the phase boundary between the melt and the slag, as in the presently

claimed invention.

In view of these considerations it is respectfully submitted that the rejection of claims 1-6, 9 and 10 under 35 U.S.C. 103(a) over the above-discussed reference is overcome and should be withdrawn.

The remaining references have also been considered. Applicants submit that they add nothing to the teachings of Görnerup so as to suggest the presently claimed invention. In view of these considerations it is respectfully submitted that the rejections of claims 7, 8 and 11 under 35 U.S.C. 103(a) are overcome and should be withdrawn.

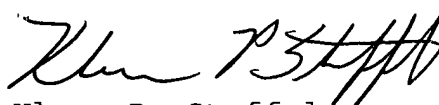
Reconsideration and allowance of the present application are respectfully requested.

Any additional fees or charges required at this time in connection with this application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

HM-657

Respectfully submitted,

By



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**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450 Alexandria, VA 22313-1450, on May 23, 2008.

By:

  
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